

U.S.S.N. 10/658,709

Claim Amendments

Please amend claims 1, 2, 3, 5, 9-11, 13, 17, and 20 as follows:

Please cancel claim 25 as follows:

U.S.S.N. 10/658,709

Listing of Claims

1. (currently amended) A primer tank for generating a primer vapor for treating a substrate with reduced primer droplet formation and improved deposition uniformity of said primer vapor on said substrate comprising:

a tank body for containing a liquid primer to form a planar exposed surface of said liquid primer, said planar exposed surface comprising a liquid vapor interface; and,

a nozzle assembly comprising a nozzle plate, said nozzle plate comprising a plurality of openings arranged in a planar dispersed pattern, said plurality of openings disposed above said planar exposed surface and arranged ~~for~~ to directing a plurality of gas streams ~~in-a~~ from said planar dispersed pattern onto said planar exposed surface to form said primer vapor in a vapor collection space above said liquid vapor interface.

2. (currently amended) The primer tank of claim 1 wherein said nozzle assembly further comprises:

a gas inlet pipe ~~for receiving~~ adapted to receive a primary gas stream and said nozzle plate provided in downstream fluid

U.S.S.N. 10/658,709

communication with said gas inlet pipe;

wherein said ~~nozzle plate~~ planar disperse pattern comprises said plurality of openings ~~forming~~ disposed in a plurality of radially dispersed pattern extending rows on a plate surface of said nozzle plate ~~for dividing said primary stream into said plurality of gas streams.~~

3. (currently amended) The primer tank of claim 1 further comprising a level sensor provided in said tank body ~~for sensing~~ adapted to sense a level of the liquid primer in said tank body.

4. (cancelled)

5. (currently amended) The primer tank of claim 1 further comprising a vapor outlet ~~for distributing~~ adapted to distribute the primer vapor from said vapor collection space to a downstream process.

Claims 6-8 (cancelled)

9. (currently amended) A primer tank for generating a primer vapor for treating a substrate with improved deposition

U.S.S.N. 10/658,709

uniformity of said primer vapor on said substrate, comprising:

a tank body for containing a liquid primer to form a planar exposed surface of said liquid primer; and,

a nozzle assembly provided in said tank body, said nozzle assembly having a gas inlet pipe for receiving a primary gas stream;

a housing having a housing interior provided in fluid communication with said gas inlet pipe; and

a nozzle plate in downstream fluid communication with said housing, said nozzle plate having a plurality of openings comprising a planar dispersed pattern, said planar dispersed pattern for receiving adapted to receive the primary gas stream and ejecting a plurality of secondary gas streams ~~in a planar dispersed pattern~~ onto said planar exposed surface to create a primer vapor in a vapor collection space above said exposed surface.

10. (currently amended) The primer tank of claim 9 further comprising a level sensor provided in said tank body ~~for sensing adapted to sense~~ a level of the liquid primer in said tank body.

U.S.S.N. 10/658,709

11. (currently amended) The primer tank of claim 9 further comprising a vapor outlet tube provided in fluid communication with said tank body ~~for distributing~~ adapted to distribute the primer vapor from said tank body.

12. (cancelled)

13. (currently amended) The primer tank of claim 9 wherein said planar dispersed pattern comprises said plurality of openings are arranged disposed in a plurality of radially extending rows on a plate surface of said nozzle plate, said plate surface arranged above said planar exposed surface.

Claims 14-16 (cancelled)

17. (currently amended) A method of generating a primer vapor from a liquid primer for treating a substrate to reduce primer vapor droplet formation and improved deposition uniformity of said primer vapor on said substrate comprising the steps of:

providing a primer tank having a tank body;

U.S.S.N. 10/658,709

providing the liquid primer in said tank body to form a planar exposed surface of said liquid primer, said exposed surface comprising a liquid vapor interface;

directing an inert gas comprising a plurality of gas streams ~~in~~ from a plurality of openings, said plurality of openings comprising a planar dispersed pattern formed from in a plate surface of a nozzle plate comprising a plurality of openings, said plurality of gas streams directed onto said planar exposed surface to form a vapor above said liquid vapor interface, said vapor comprising said liquid primer and said inert gas; and,

transferring said vapor to a downstream process to deposit said vapor on said substrate.

18. (original) The method of claim 17 wherein said liquid primer comprises hexamethyldisilazone.

19. (previously presented) The method of claim 17 wherein said plurality of gas streams are directed onto said planar exposed surface at subatmospheric pressures.

20. (currently amended) The method of claim 17 wherein the step of directing comprises:

U.S.S.N. 10/658,709

providing a primary gas stream;

dividing said primary gas stream into said plurality of gas streams according to said plurality of openings, said plurality of openings disposed in a plurality of radially extending rows on a plate surface of said nozzle plate to form said planar dispersed pattern, said planar ~~comprising a radially dispersed~~ pattern disposed above said planar exposed surface; and,

directing said plurality of gas streams against said planar exposed surface and collecting said vapor in a vapor collection space disposed above the vapor liquid interface.

21. (previously presented) The method of claim 20, wherein said plurality of openings are arranged in a plurality of radially-extending rows on said nozzle plate surface.

22. (previously presented) The method of claim 17, wherein said inert gas comprises nitrogen.

23. (previously presented) The method of claim 17, wherein said downstream process comprises treating a semiconductor process wafer with the primer vapor, wherein said downstream process is

U.S.S.N. 10/658,709

maintained at a relatively lower pressure than the vapor collection space.

24. (previously presented) The primer tank of claim 5, wherein said downstream process is maintained at a lower pressure relative to said vapor collection space.

25. (cancelled)